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NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION • US DEPARTMENT OF COMMERCE

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**FOR IMMEDIATE RELEASE**
January 17, 2007

## NOAA CHEMICAL CONTAMINATION ASSESSMENT QUANTIFIES EXTENT OF CONTAMINATION AND TOXICITY IN CHESAPEAKE BAY SEDIMENTS

In a new online report, NOAA announced today that the major portion of the Chesapeake Bay, called the "mainstem," has minimal sediment contamination, but that there are localized areas of the bay showing elevated contaminant levels.

Researchers from NOAA's National Centers for Coastal Ocean Science collected sediment samples from the Chesapeake Bay between 1998 and 2001 to determine where and how severely the sediments are contaminated by toxic chemicals. The comprehensive contaminant report, "Magnitude and Extent of Contaminated Sediment and Toxicity in Chesapeake Bay," covers the entire mainstem of the Chesapeake Bay, along with its major western tributaries—the Patuxent, Potomac, Rappahannock, York, and James rivers.

Toxic contaminants enter the bay from these and other tributaries as well as from a variety of other sources including windblown dust, storm water runoff, spills, and direct discharge.

"NOAA shares in the widespread public concern that the ecological functions of the bay are becoming impaired and that has the potential to impact human health," says John H. Dunnigan, director of NOAA's National Ocean Service. "Understanding the impacts and sources of contaminants to the nation's largest estuary is part of a long term commitment to understanding the bay's ecosystem. We are committed to working with our federal, state, and local partners in restoring its integrity as a sustainable coastal resource."

NOAA's study examined a variety of toxic contaminants found in Chesapeake Bay, including metals, Polychlorinated Biphenyls (PCBs), persistent chlorinated pesticides and Polycyclic Aromatic Hydrocarbons (PAHs). NOAA scientists also studied the organisms living in the sediments (also called the benthos) within the research area, to determine which animals live where. Scientists then conducted laboratory studies to assess how the contaminants affect estuarine organisms. The report summarizes where contamination exists and the correlation between benthic community impacts, observed toxicity, and contaminant levels.

While the study found most of the Chesapeake mainstem is relatively uncontaminated, most sample locations in the major western tributaries have higher contaminant concentrations than the mainstem. In addition to contaminant hot spots in Baltimore and Norfolk harbors, contaminants accumulate in the Susquehanna Flats and the deep trough areas west of Kent Island and south of the Chesapeake Bay Bridge. The Hart Miller Island area, where dredge spoil from Baltimore harbor and its approach channels are deposited in a containment facility, shows metals are at higher concentrations there than at other location in the mainstem.

The study also found benthic species richness, abundance and diversity went down as contamination levels and toxicity increased. Toxicity increased as contamination levels increased. Though the types of fine sediments where contaminants accumulate also are where many aquatic animals tend not settle and live due to poorer habitat conditions, when sediment type was taken into account, researchers found toxicity still affected benthic communities.

“The benthic environment is a part of the food chain which supports many estuarine fish and wildlife species,” said Ian Hartwell, an ecologist with NOAA's National Status and Trends Program’s Bioeffects Project. “Sediment contaminants often pose ecological and human health risks through degraded habitats, loss of fauna, contaminants accumulating in the coastal food chain, and human consumption of contaminated fish and wildlife. Characterizing coastal sediment contamination is critical for understanding where contamination exists, how bad it is, and for creating management plans.”

In addition to contaminant studies, NOAA has a wide range of efforts underway to understand and address the ecological health of Chesapeake Bay. NOAA’s Chesapeake Bay Office works to help protect and restore the Chesapeake Bay through its programs in fisheries management, habitat restoration, coastal observations, and education. NOAA’s Cooperative Oxford Laboratory investigates the health problems of fish, shellfish, and other aquatic life in the bay and develops ecosystem-based management strategies to prevent and mitigate diseases in fish and shellfish. NOAA’s National Status and Trends program conducts the Mussel Watch project, which monitors contaminants in mussels and oysters at coastal sites nationwide, and has a publicly available set of national contaminant data covering over 20 years.

In 2007 the National Oceanic and Atmospheric Administration, an agency of the U.S. Commerce Department, celebrates 200 years of science and service to the nation. From the establishment of the Survey of the Coast in 1807 by Thomas Jefferson to the formation of the Weather Bureau and the Bureau of Commercial Fisheries in the 1870s, much of America's scientific heritage is rooted in NOAA.

NOAA is dedicated to enhancing economic security and national safety through the prediction and research of weather and climate-related events and information service delivery for transportation, and by providing environmental stewardship of our nation's coastal and marine resources. Through the emerging Global Earth Observation System of Systems (GEOSS), NOAA is working with its federal partners, more than 60 countries and the European Commission to develop a global monitoring network that is as integrated as the planet it observes, predicts and protects.

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On the Web:
NOAA: http://www.noaa.gov/
NOAA National Ocean Service: http://www.oceanservice.noaa.gov/
NOAA National Centers for Coastal Ocean Science: http://coastalscience.noaa.gov/
Magnitude and Extent of Contaminated Sediment and Toxicity in Chesapeake Bay report: http://ccma.nos.noaa.gov/publications/NCCOSTM47.pdf